

especially in wells that have only small flows, and as many of the wells are not cased, the water issuing from a given well may come from several horizons at which the temperatures differ. In general, however, by far the greatest discharge is from the bottom of the well, and the cooling effect of water from higher levels is small. It is therefore believed that the average temperature, about 117°F., of the water from the 4 principal flowing units at Indian Hot Springs may be taken as a fair indication that the water rises from a depth of about 2,500 feet, this figure being derived from the plotted gradient as worked out by Mr. Spicer from the field data.

The mechanism that forces the water from this depth to the surface may be the same as that suggested to account for the pressure in the numerous artesian wells of this valley. It may be briefly stated as follows: The altitude of the water table in the porous gravels and sands (fig. 2) under the intake area along the margins of the valley is much higher than the surface of the central part of the valley. The pressure of the water in the marginal belts is transmitted underground to vertical openings, such as wells, in the dense lacustrine deposits of the central part of the valley. If the wells are at points where the surface altitude is sufficiently low, artesian pressure will cause discharge of water at their mouths.

BOTANY.—*Two new grasses from the United States and Mexico.*¹

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Two new grasses have recently been discovered in the United States and Mexico. The first is a new species of *Calamagrostis* collected in Jackson Co., Ohio, by Floyd Bartley and Leslie L. Pontius, and the second is a new species of *Bouteloua* found in Baja California by Forrest Shreve.

Calamagrostis insperata Swallen, sp. nov.

Perennis; culmi 85–95 cm. alti, glabri, e rhizomatibus erecti; vaginae glabrae, internodiis multo breviores; laminae planae, acuminatae, 10–22 cm. longae, 3–8 mm. latae, glabrae, marginibus scabris; ligula 5 mm. longa; panicula 12–14 cm. longa, ramis adscendentibus; spiculae appressae, 5–5.5 mm. longae; gluma prima lanceolata, 1–nervis; gluma secunda acuta, gluma prima paulo brevior, 3–nervis; lemma 4 mm. longum, 5–nervis, scabrum, apice erosum; pili calli lemnae duplo breviores; rachilla 0.5 mm. longa, pilis 2 mm. longis; arista 1 mm. supra callum inserta, geniculata, circiter 3 mm. longa.

Perennial; culms 85–95 cm. tall, erect, glabrous, with slender creeping rhizomes; sheaths much shorter than the internodes, smooth or scaberulous;

¹ Received June 14, 1934.

blades flat, acuminate, 10–22 cm. long, 3–8 mm. wide, glabrous, the margins scabrous; ligule membranaceous, about 5 mm. long; panicles 12–14 cm. long, the branches narrowly ascending, at least some of them naked toward the base, the lower ones as much as 5 cm. long; spikelets appressed to the branches, 5–5.5 mm. long; glumes unequal, somewhat keeled, scabrous on the keels, the first lanceolate, 1-nerved, the second acute, 3-nerved; lemma 4 mm. long, 5-nerved, scabrous, the narrow tip erose; callus hairs moderately dense, the lateral ones about half as long as the lemma, those on the back of the callus shorter; prolongation of the rachilla 0.5 mm. long, the hairs 2 mm. long; awn inserted about $\frac{1}{4}$ above the base, equaling the lemma, twisted below, geniculate, protruding from the glumes at maturity.

Type in the U. S. National Herbarium no. 1,611,713. Collected in Ofer Hollow, Liberty Township, Jackson Co., Ohio, August 1, 1934, by Floyd Bartley and Leslie L. Pontius.

This species is closely related to *C. pickeringii*, in which the spikelets are only 4–4.5 mm. long, the callus hairs are scant, and the rachilla hairs are only 0.5 mm. long.

Bouteloua annua Swallen, sp. nov.

Annual; culmi dense caespitosi, erecti, basi geniculati, 3–25 cm. alti, glabri, ramosi; vaginae internodiis breviores; laminae planae, acutae, 1–3.5 cm. longae, 1.5–2 mm. latae, pubescentes vel glabrae; ligula ciliata, 0.2 mm. longa; spicae 2–7, 1.5–2 cm. longae; spiculae 8–10 mm. longae, non pectinatae; gluma prima 1-nervis, 3.5–7 mm. longa, angusta; gluma secunda 6–9 mm. longa, 1-nervis, lata; lemma fertile, gluma secunda paulo longius, 3-nerve, 3-dentatum, dentibus 2 mm. longis; flos imperfectus pilosus, aristis 3 scabris.

Annual; culms densely tufted, erect or geniculate spreading at the base, 3–25 cm. long, glabrous with a single branch from the middle node; sheaths shorter than the internodes, glabrous; blades flat, 1–3.5 cm. long, 1.5–2 mm. wide, acute, pubescent on the upper surface or nearly glabrous; ligule ciliate, 0.2 mm. long; inflorescence as much as 8 cm. long with 2–7 rather distant ascending to spreading spikes, these falling entire; spikes distant, 1.5–2 cm. long, bearing 4–7 usually appressed spikelets, the rachis produced beyond the uppermost spikelet; spikelets 8–10 mm. long, appressed, green or usually purple, with one fertile floret and a 3-awned rudiment; glumes 1-nerved, more or less scabrous on the nerves, otherwise glabrous, the first 3.5–7 mm. long, very narrow, the second 6–9 mm. long, much broader, inclosing the florets; lemma a little longer than the second glume prominently 3-nerved, 3-toothed, the teeth about 2 mm. long, sparsely appressed pilose in lines especially close to the nerves, the callus densely pubescent; rudiment somewhat exceeding the lemma, the base stout, pilose, the awns scabrous.

Type in the U. S. National Herbarium no. 1,611,715. Collected 4 miles east of San Ignacio, Baja California, March 6, 1935, by Forrest Shreve.

This species belongs to the section *Atheropogon*, in which the spikes fall entire from the main axis and the spikelets are not pectinately arranged. Two other annual species, *B. alamosana* and *B. aristoides*, belong to this group. The first differs from *B. annua* in having tuberculate hairy foliage,

and shorter spikes (10–15 mm. long), the spikelets closely appressed to the rachis. The second differs in having very slender spreading spikes with distant appressed spikelets. *B. annua* resembles *B. filiformis* in the form of the inflorescence, but that species is strictly perennial.

ZOOLOGY.—*A restudy of Filariopsis arator Chandler, 1931, with a discussion of the systematic position of the genus Filariopsis van Thiel, 1926.*¹ EVERETT E. WEHR, Bureau of Animal Industry. (Communicated by ELOISE B. CRAM.)

Van Thiel (1926)² proposed the genus and species *Filariopsis asper* for nematodes collected from the lungs of a “roaring monkey” (*Mycetes seniculus*) by Dr. C. Bonne in Surinam, British Guiana. Five years later, Chandler (1931)³ described a second species *F. arator* for nematodes collected from the lungs of a South American monkey (*Cebus* sp.) by Dr. W. H. Taliaferro in Chicago, Illinois. Van Thiel referred the genus *Filariopsis* to the superfamily Filarioidea without assigning it to a family. Chandler, however, created the family Filariopsidae solely for its reception.

The present writer has made a restudy of the type specimens of *Filariopsis arator* Chandler, 1931. The results of this study have made it necessary to revise the original description of this species in certain respects. It has also made it possible to include a discussion of the cephalic papillae which have not been described in the literature.

RESTUDY OF FILARIOPSIS ARATOR

In the original descriptions it was stated that the oral opening was surrounded by 3 either “conspicuous” (*F. asper*) or “very inconspicuous” (*F. arator*) lips. According to the present writer, the head of *Filariopsis arator* is provided with 2 lateral trilobed lips (Fig. 1) on which are located a number of papillae. These papillae, numbering 14 in all, are divided, according to their mode of innervation, into 2 circles: An external circle of 8 papillae arranged in 4 groups of 2 papillae each, of which the dorsodorsals and ventroventrals are slightly smaller than, and situated internal to, the laterodorsals and lateroventrals; and an internal circle of 6 papillae, consisting of 1 papilla on the anterior border of each of the 6 lobes of the 2 trilobed lips. The amphids are located posterior to the internolateral papillae.

¹ Received June 7, 1934.

² VAN THIEL, P. H. *On some filariae parasitic in Surinam mammals, with the description of Filariopsis asper n. g., n. sp.* Parasitology 18: 128–136. 1926.

³ CHANDLER, A. C. *New genera and species of nematode worms.* Proc. U. S. Nat. Mus., (2866), 78: 1–11. 1931.